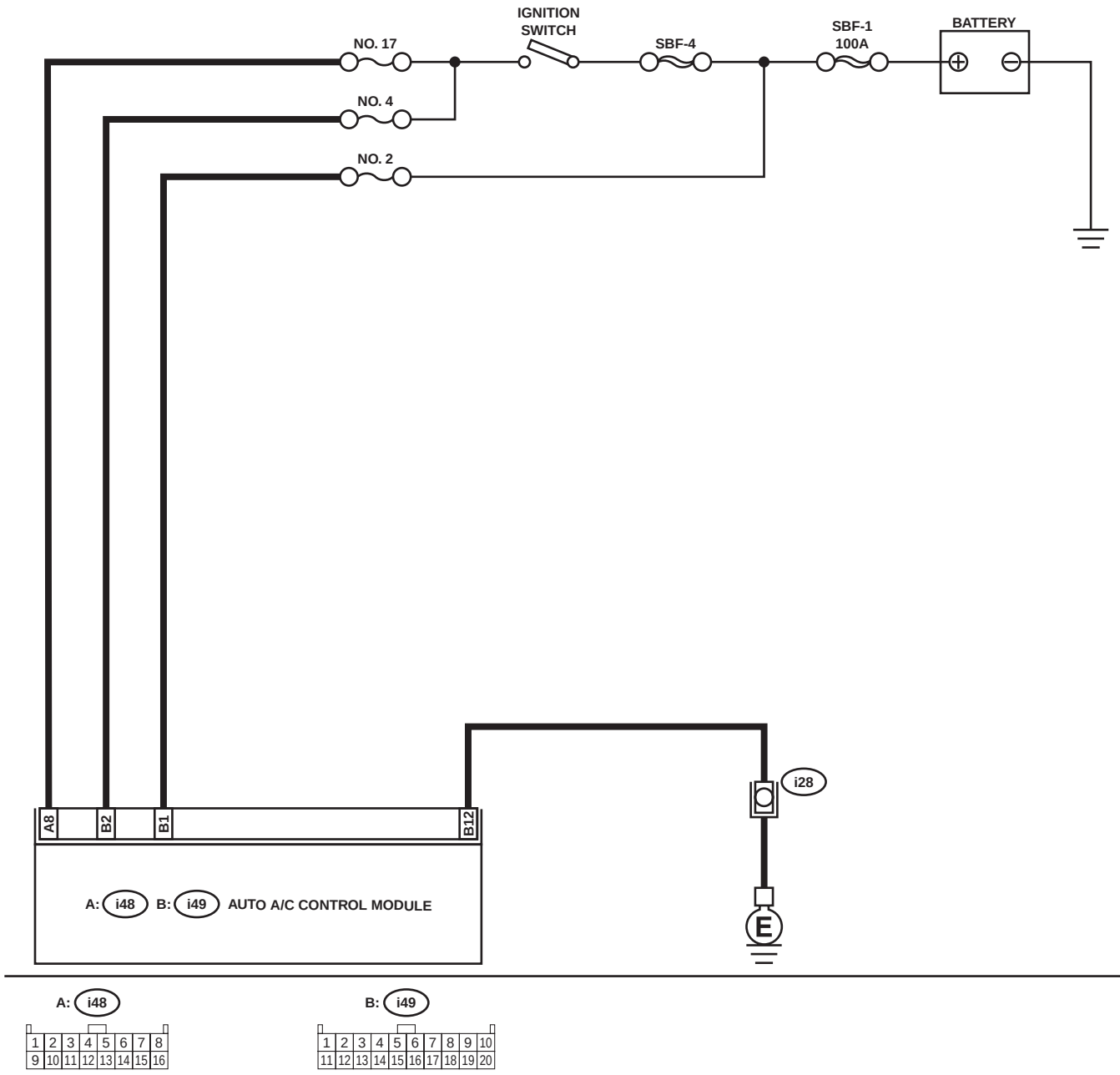
6. Diagnostics for A/C System Failure

A: A/C AND/OR SELF-DIAGNOSIS SYSTEMS DO NOT OPERATE

TROUBLE SYMPTOM:

- “Set” temperature is not indicated on display, switch LEDs are faulty and switches do not operate.
- Self-diagnosis system does not operate.

WIRING DIAGRAM:



AC-00318

DIAGNOSTICS FOR A/C SYSTEM FAILURE

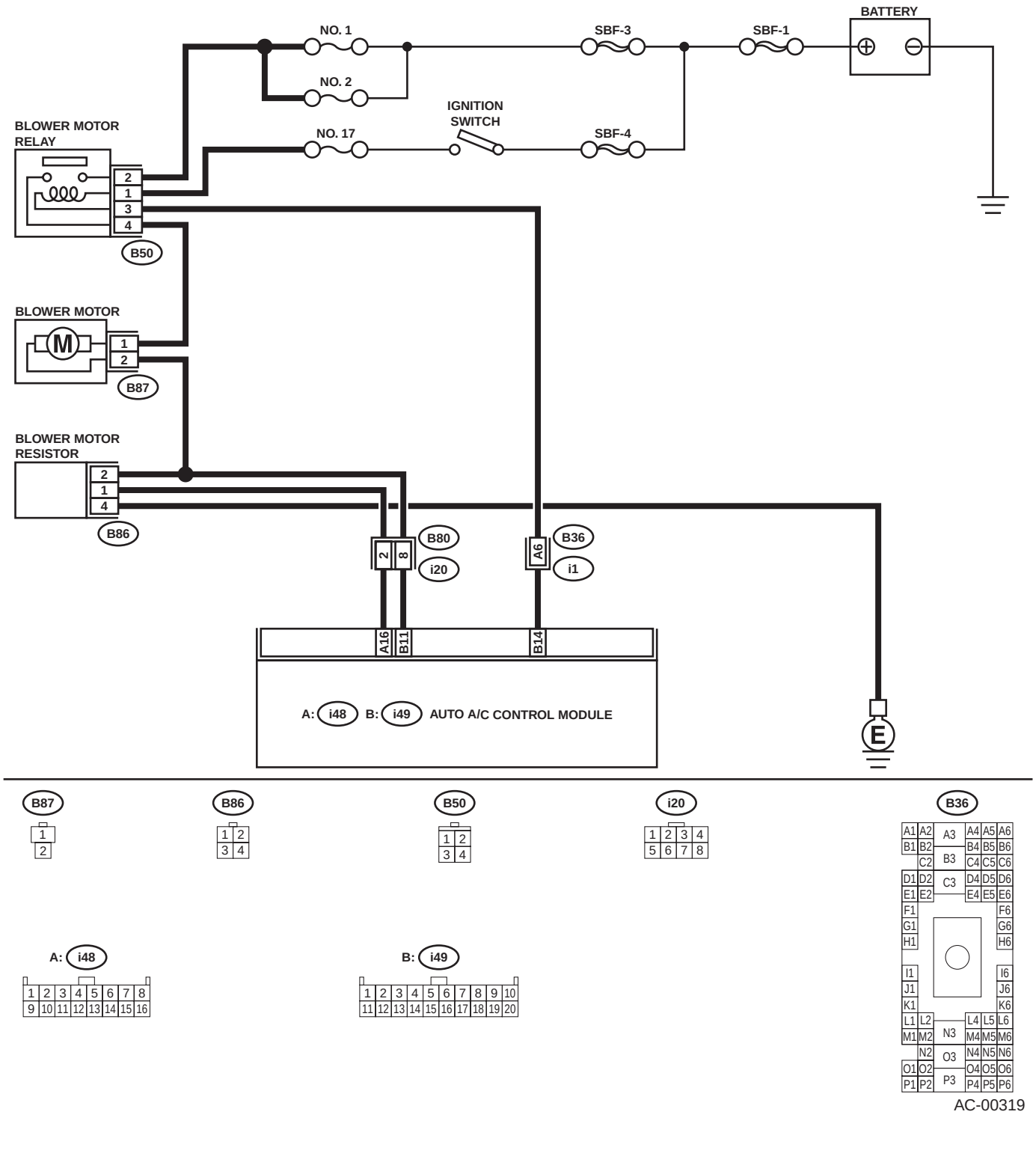
	Step	Value	Yes	No
1	**CHECK FUSE.** 1) Turn ignition switch to OFF. 2) Remove fuse No. 2 from main fuse box. 3) Check condition of fuse. Is the fuse blown-out?	Fuse is not blown-out.	Go to step **2.**	Replace fuse.
2	**CHECK FUSE.** 1) Turn ignition switch to OFF. 2) Remove fuses No. 4 and No. 17 from fuse & relay box. 3) Check condition of fuse. Is the fuse blown-out?	Fuse is not blown-out.	Go to step **3.**	Replace fuse.
3	**CHECK A/C CONTROL MODULE POWER CIRCUIT.** 1) Disconnect A/C control module connector. 2) Measure voltage between A/C control module connector terminal and chassis ground when turning ignition switch to OFF. ***Connector & terminal*** ***(i49) No. 1 (+) — Chassis ground (–):*** Does the measured value exceed the specified value?	10 V	Go to step **4.**	Repair harness for power supply line.
4	**CHECK A/C CONTROL MODULE POWER CIRCUIT.** Measure voltage between A/C control module connector terminal and chassis ground when turning ignition switch to ACC. ***Connector & terminal*** ***(i49) No. 2 (+) — Chassis ground (–):*** Does the measured value exceed the specified value?	10 V	Go to step **5.**	Repair harness for power supply line.
5	**CHECK A/C CONTROL MODULE POWER CIRCUIT.** Measure voltage between A/C control module connector terminal and chassis ground when turning ignition switch to ON. ***Connector & terminal*** ***(i48) No. 8 (+) — Chassis ground (–):*** Does the measured value exceed the specified value?	10 V	Go to step **6.**	Repair harness for power supply line.
6	**CHECK A/C CONTROL MODULE GROUND CIRCUIT.** Measure resistance of harness between A/C control module and chassis ground. ***Connector & terminal*** ***(i49) No. 12 — Chassis ground:*** Is the measured value less than the specified value?	1 Ω	Go to step **7.**	Repair harness for ground line.
7	**CHECK POOR CONTACT.** Check poor contact in A/C control module connector. Is there poor contact in connector?	There is no poor contact.	Replace A/C control module.	Repair connector.

B: BLOWER MOTOR DOES NOT ROTATE

TROUBLE SYMPTOM:

- Blower motor does not rotate.
- Blower motor does not rotate in “HI”.

WIRING DIAGRAM:

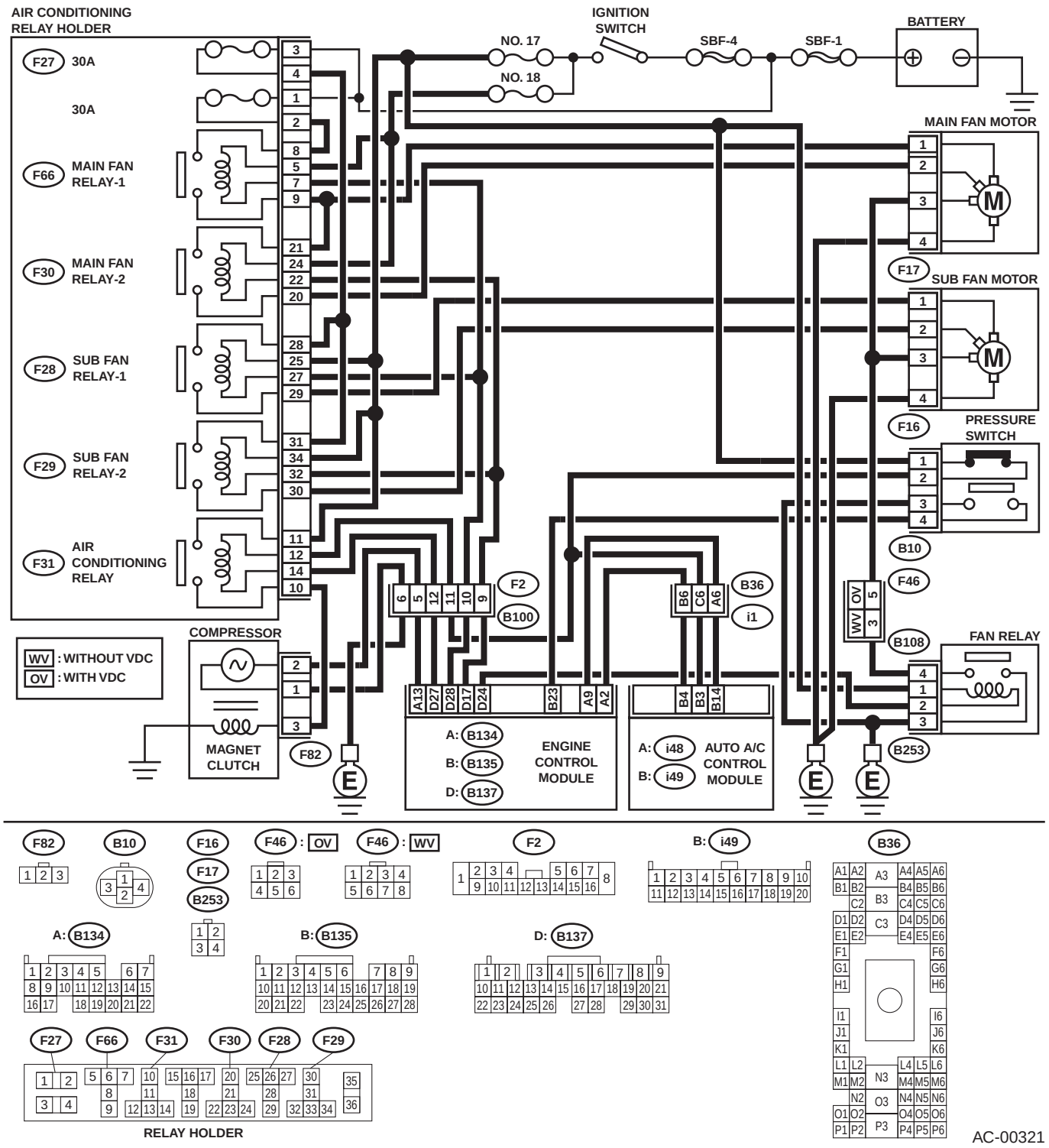


AC-00319

	Step	Value	Yes	No
1	**CHECK FUSE.** 1) Remove No. 1, No. 2 and No. 17 fuses in fuse & relay box. 2) Check condition of fuses. Are any of the fuses blown-out?	Fuse is not blown-out.	Go to step **2.**	Replace fuse.
2	**CHECK POWER SUPPLY TO BLOWER FAN MOTOR.** 1) Turn ignition switch to ON. 2) Turn blower switch to ON. 3) Measure voltage between blower fan motor and chassis ground. ***Connector & terminal (B87) No. 1 (+) — Chassis ground (–):*** Does the measured value exceed the specified value?	10 V	Go to step **3.**	Repair harness for blower fan motor power supply line.
3	**CHECK BLOWER FAN MOTOR RELAY.** 1) Turn ignition switch to OFF. 2) Remove blower fan motor relay. 3) Connect terminals as follows: Positive terminal (+) of battery to terminal No. 1 of blower fan motor relay Negative terminal (–) of battery to terminal No. 3 of blower fan motor relay 4) Measure resistance between No. 2 and No. 4 terminals. ***Terminals: No. 2 — No. 4*** Is the measured value less than the specified value?	1 Ω	Go to step **4.**	Replace blower fan motor relay.
4	**CHECK BLOWER FAN MOTOR.** 1) Disconnect connector from blower fan motor. 2) Connect terminals as follows: Positive terminal (+) of battery to terminal No. 1 of blower fan motor relay Negative terminal (–) of battery to terminal No. 2 of blower fan motor relay 3) Make sure that blower fan motor is operated. Does the blower fan motor operate?	Blower fan motor operates.	Go to step **5.**	Replace blower fan motor.
5	**CHECK POOR CONTACT.** Check poor contact in A/C control module connector. Is there poor contact in connector?	There no poor contact.	Replace A/C control module.	Repair connector.

C: COMPARTMENT TEMPERATURE DOES NOT CHANGE FROM “SET” TEMPERATURE OR AIR CONDITIONING SYSTEM DOES NOT RESPOND QUICKLY

WIRING DIAGRAM:



AC-00321

DIAGNOSTICS FOR A/C SYSTEM FAILURE

	Step	Value	Yes	No
1	**CHECK FUSE.** 1) Turn the ignition switch to OFF. 2) Remove the main fan fuse and sub fan fuse in main fuse box. 3) Check the condition of fuse. Is the fuse blown out?	No fuse blown out.	Go to step **2.**	Replace the fuse.
2	**CHECK THE POWER SUPPLY TO PRESSURE SWITCH.** 1) Disconnect the connector from pressure switch. 2) Turn the ignition switch to OFF. 3) Measure the resistance between harness connector and chassis ground. ***Connector & terminal*** ***(B10) No. 1 (+) — Chassis ground (–):*** Is the measured value more than specified value?	10 V	Go to step **3.**	Repair the harness for pressure switch power supply circuit.
3	**CHECK THE HARNESS BETWEEN PRESSURE SWITCH AND A/C RELAY HARNESS.** 1) Turn the ignition switch to OFF. 2) Remove the A/C relay in main fuse box. 3) Measure the resistance between A/C relay and pressure switch connector. ***Connector & terminal*** ***(F31) No. 12 — (B10) No. 2:*** Is the measured value less than specified value?	1 Ω	Go to step **4.**	Repair the harness between A/C relay and pressure switch.
4	**CHECK THE PRESSURE SWITCH.** Measure the resistance between pressure switch terminals. ***Terminals*** ***No. 1 — No. 2:*** Is the measured value less than specified value?	1 Ω	Go to step **5.**	Replace the pressure switch.
5	**CHECK THE A/C CUT SIGNAL CIRCUIT.** 1) Disconnect the connector from A/C control module. 2) Measure the resistance between A/C control module and pressure switch connector. ***Connector & terminal*** ***(i49) No. 3 — (B10) No. 2:*** Is the measured value less than specified value?	1 Ω	Go to step **6.**	Repair the harness between A/C control module and pressure switch.
6	**CHECK THE A/C ON SIGNAL CIRCUIT.** 1) Disconnect the connector from engine control module. 2) Measure the resistance between engine control module and A/C control module connector. ***Connector & terminal*** ***(B134) No. 2 — (i49) No. 4:*** Is the measured value less than specified value?	1 Ω	Go to step **7.**	Repair the harness between A/C control module and engine control module.
7	**CHECK A/C RELAY.** 1) Remove the A/C relay in main fuse box. 2) Check the A/C relay. <Ref. to AC-40, INSPECTION S701287A10, Relay and Fuse S701287.> Is the operation of the relay OK?	Relay operates normally.	Go to step **8.**	Replace the A/C relay.

DIAGNOSTICS FOR A/C SYSTEM FAILURE

	Step	Value	Yes	No
8	**CHECK POWER SUPPLY TO MAGNET CLUTCH OF A/C COMPRESSOR.** 1) Turn the ignition switch to OFF, and then connect the A/C relay connector and all removed connectors. 2) Start the engine, and turn A/C switch to ON. 3) Set the temperature control dial to maximum cold position. 4) Measure the voltage between magnet clutch harness connector and chassis ground. ***Connector & terminal*** ***(F82) No. 3 (+) — Chassis ground (–):*** Is the measured value more than specified value?	10.5 V (At normal temperature)	Go to step **9.**	Repair the harness for power supply line of A/C compressor.
9	**CHECK OPERATION OF MAIN FAN MOTOR.** 1) Start the engine and turn the A/C switch to ON. 2) Check the operation of main fan motor. Does the main fan motor operate?	Fan motor operates.	Go to step **14.**	Go to step **10.**
10	**CHECK POWER SUPPLY TO MAIN FAN MOTOR.** **CAUTION:** **Be careful not to overheat the engine during repair.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from main fan motor. 3) Start the engine, and warm it up until engine coolant temperature increases over 95°C (203°F). 4) Stop the engine and turn ignition switch to ON. 5) Measure the voltage between main fan motor harness connector and chassis ground. ***Connector & terminal*** ***Turbo engine model:*** ***(F17) No. 1, 2, 3 (+) — Chassis ground (–):*** Is the measured value more than specified value?	10 V	Go to step **11.**	Repair the harness for main fan motor power supply circuit.
11	**CHECK GROUND CIRCUIT OF MAIN FAN MOTOR.** 1) Measure the resistance between main fan motor harness connector and chassis ground. ***Connector & terminal*** ***(F17) No. 4 — Chassis ground:*** Is the measured value less than specified value?	1 Ω	Go to step **12.**	Repair the harness for main fan motor ground circuit.
12	**CHECK MAIN FAN MOTOR.** Connect the battery positive (+) terminal to terminals No. 1, 2 and 3, and ground (–) terminal to terminal No. 4 of main fan motor connector to make sure that main fan motor rotate. Does the main fan rotate?	Fan motor operates.	Go to step **13.**	Replace the main fan motor.

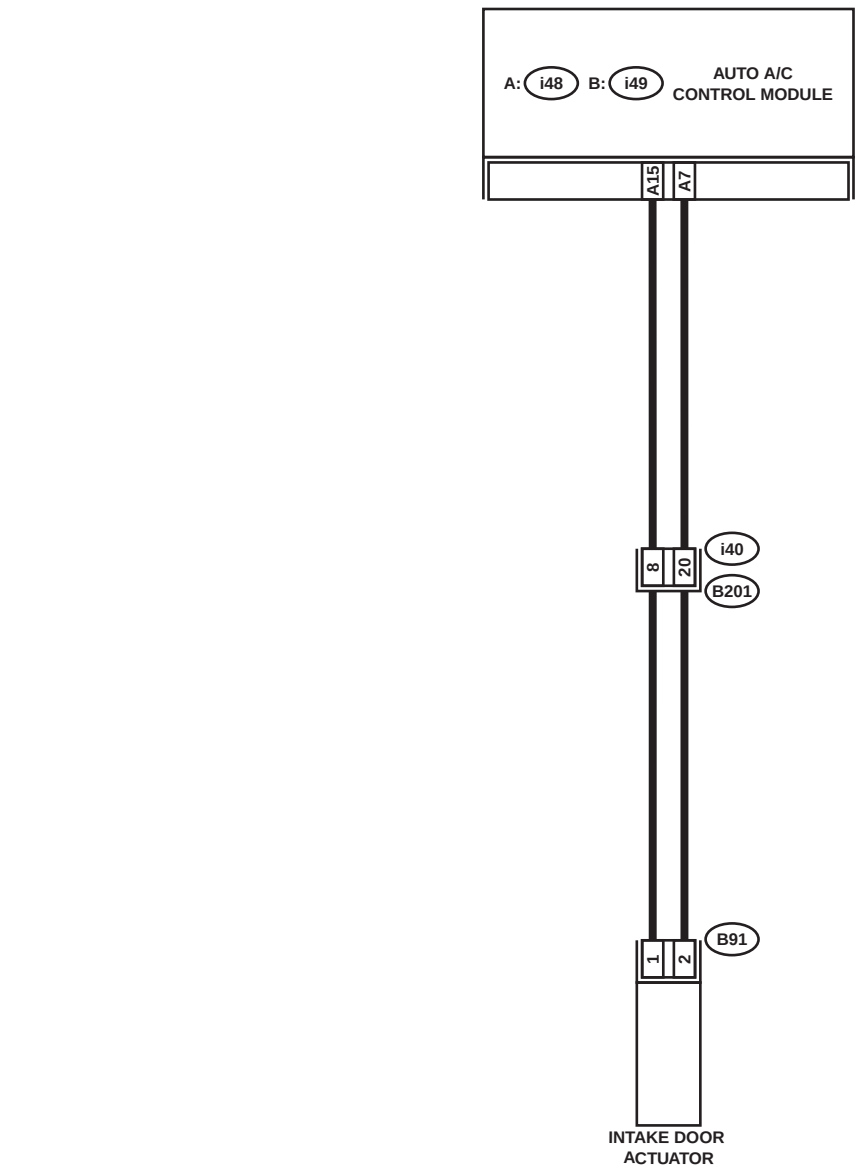
	Step	Value	Yes	No
13	**CHECK POOR CONTACT IN MAIN FAN MOTOR CONNECTOR.** Check poor contact in main fan motor harness connector. Is there poor contact in connector?	There is no poor contact.	Go to step **14.**	Repair the poor contact in main fan motor connector.
14	**CHECK OPERATION OF SUB FAN MOTOR.** 1) Start the engine and turn the A/C switch to ON. 2) Check the operation of sub fan motor. Does the sub fan motor operate normally?	Fan motor operates.	Go to step **19.**	Go to step **15.**
15	**CHECK POWER SUPPLY TO SUB FAN MOTOR.** **CAUTION:** **Be careful not to overheat the engine during repair.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from sub fan motor. 3) Start the engine, and warm it up until engine coolant temperature increases over 100°C (212°F). 4) Stop the engine and turn ignition switch to ON. 5) Measure the voltage between sub fan motor harness connector and chassis ground. ***Connector & terminal*** ***(F16) No. 1, 2, 3 (+) — Chassis ground (–):*** Is the measured value more than specified value?	10 V	Go to step **16.**	Repair the harness for sub fan motor power supply circuit.
16	**CHECK GROUND CIRCUIT OF SUB FAN MOTOR.** Measure the resistance between sub fan motor harness connector and chassis ground. ***Connector & terminal*** ***(F16) No. 4 — Chassis ground:*** Is the measured value less than specified value?	1 Ω	Go to step **17.**	Repair the harness for sub fan motor ground circuit.
17	**CHECK SUB FAN MOTOR.** Connect the battery positive (+) terminal to terminals No. 1, 2 and 3, and ground (–) terminal to terminal No. 4 of sub fan motor connector to make sure that sub fan motor rotate. Does the sub fan motor rotate?	Fan motor rotates.	Go to step **18.**	Replace the sub fan motor.
18	**CHECK POOR CONTACT IN SUB FAN MOTOR CONNECTOR.** Check poor contact in sub fan motor connector. Is there poor contact in connector?	There is no poor contact.	Go to step **19.**	Repair the poor contact in sub fan motor connector.
19	**CHECK POOR CONTACT IN AUTO A/C CONTROL MODULE CONNECTOR.** Check poor contact in auto A/C control module connector. Is there poor contact in connector?	There is no poor contact.	Replace the auto A/C control module.	Repair the connector.

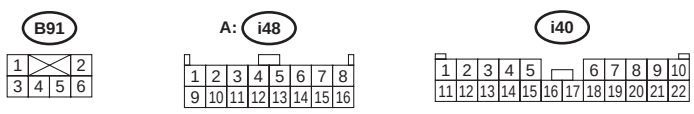
D: FRESH/RECIRC DOES NOT CHANGE

TROUBLE SYMPTOM:

FRESH/RECIRC mode door does not change.

WIRING DIAGRAM:





AC-00320

DIAGNOSTICS FOR A/C SYSTEM FAILURE

	Step	Value	Yes	No
1	**CHECK SWITCH OPERATION.** Make sure that the mode selection on display is changed when pushing the “FRESH/ RECIRC” switch. Does the mode selection change?	Mode selection changes.	Go to step **7.**	Go to step **2.**
2	**CHECK FUSE.** 1) Remove No. 17 fuse in fuse & relay box. 2) Check condition of fuse. Is the fuse blown-out?	Fuse is not blown-out.	Replace fuse.	Go to step **3.**
3	**CHECK SIGNAL VOLTAGE.** 1) Change display to RECIRC by pushing FRESH/RECIRC switch. 2) Measure voltage between A/C control module and chassis ground. ***Connector & terminal*** ***(i48) No. 15 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	1 V	Go to step **4.**	Repair short circuit in harness between A/C control module and intake door actuator.
4	**CHECK SIGNAL VOLTAGE.** 1) Change display to FRESH with pushing FRESH/RECIRC switch. 2) Measure voltage between A/C control module and chassis ground. ***Connector & terminal*** ***(i48) No. 7 (+) — Chassis ground (–):*** Is the measured value less than the specified value?	1 V	Go to step **5.**	Repair short circuit in harness between A/C control module and intake door actuator.
5	**CHECK HARNESS CONNECTOR BETWEEN A/C CONTROL MODULE AND INTAKE DOOR ACTUATOR.** 1) Turn ignition switch to OFF. 2) Disconnect connector from A/C control module and intake door motor. 3) Measure resistance of harness between A/C control module and intake door actuator. ***Connector & terminal:*** ***(i48) No. 15 — (B91) No. 1*** Is the measured value less than the specified value?	1 Ω	Go to step **6.**	Repair open circuit in harness between A/C control module and intake door actuator.
6	**CHECK HARNESS CONNECTOR BETWEEN A/C CONTROL MODULE AND INTAKE DOOR ACTUATOR.** Measure resistance of harness between A/C control module and intake door actuator. ***Connector & terminal:*** ***(i48) No. 7 — (B91) No. 2*** Is the measured value less than the specified value?	1 Ω	Go to step **7.**	Repair open circuit in harness between A/C control module and intake door actuator.
7	**CHECK POOR CONTACT.** Check poor contact in A/C control module connector. Is there poor contact in connector?	There is no poor contact.	Replace A/C control module.	Repair connector.